ARTIFACT SHEET

Enter artifact number below. Artifact number is application number + artifact type code (see list below) + sequential letter (A, B, C ...). The first artifact folder for an artifact type receives the letter A, the second B, etc.. Examples: 59123456PA, 59123456PB, 59123456ZA, 59123456ZB

08/837009ZA

Indicate quantity of a single type of artifact received but not scanned. Create individual artifact folder/box and artifact number for each Artifact Type.

☐ CD(s) containing:
- computer program listing ☐
  Doc Code: Computer Artifact Type Code: P
- pages of specification and/or sequence listing and/or table ☐
  Doc Code: Artifact Artifact Type Code: S
- content unspecified or combined ☐
  Doc Code: Artifact Artifact Type Code: U

☐ Stapled Set(s) Color Documents or B/W Photographs
Doc Code: Artifact Artifact Type Code: C

☐ Microfilm(s)
Doc Code: Artifact Artifact Type Code: F

☐ Video tape(s)
Doc Code: Artifact Artifact Type Code: V

☐ Model(s)
Doc Code: Artifact Artifact Type Code: M

☐ Bound Document(s)
Doc Code: Artifact Artifact Type Code: B

☐ Confidential Information Disclosure Statement or Other Documents marked Proprietary, Trade Secrets, Subject to Protective Order, Material Submitted under MPEP 724.02, etc.
Doc Code: Artifact Artifact Type Code X

☐ Other, description: The United States Patent Document
Doc Code: Artifact Artifact Type Code: Z

March 8, 2004

The United States of America

The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person or persons having title to this patent the right to exclude others from making, using or selling the invention throughout the United States of America for the term of seventeen years from the date of this patent, subject to the payment of maintenance fees as provided by law.

Bruce Lehman

Commissioner of Patents and Trademarks

Marjorie V. Turner

Attest

US005405942A

United States Patent [19]

Bell et al.

[11] **Patent Number: 5,405,942**

[45] **Date of Patent: Apr. 11, 1995**

[54] **PREPRO INSULIN-LIKE GROWTH FACTORS I AND II**

[75] Inventors: **Graeme I. Bell; Leslie B. Rall,** both of San Francisco; **James P. Merryweather,** Berkeley, all of Calif.

[73] Assignee: **Chiron Corporation,** Emeryville, Calif.

[21] Appl. No.: **65,673**

[22] Filed: **Jun. 16, 1987**

Related U.S. Application Data

[63] Continuation of Ser. No. 630,557, Jul. 13, 1984, abandoned.

[51] **Int. Cl.**[6] **C12N 15/17;** C12N 15/12; C07H 21/04; C12Q 1/68

[52] **U.S. Cl.** **536/23.1;** 536/24.31; 435/69.1; 435/69.6; 435/172.3; 435/252.31; 435/252.33; 435/254.2; 435/320.1; 435/6

[58] **Field of Search** 536/27, 28, 23.1; 435/253, 254, 255, 68, 70, 172.3, 320.1, 69.1, 6, 69.6; 935/4, 8, 13, 4, 69, 72, 73, 74

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,338,397	7/1982	Gilbert et al.	435/68
4,394,443	7/1983	Weissman et al.	435/68
4,518,690	5/1985	Guntaka	536/27
4,728,609	3/1988	Bhatt et al.	536/27

FOREIGN PATENT DOCUMENTS

035384	9/1981	European Pat. Off. .	
036259	9/1981	European Pat. Off. .	
128042	12/1984	European Pat. Off. .	
128733	12/1984	European Pat. Off. .	
135094	3/1985	European Pat. Off. .	
8600619	1/1986	WIPO	536/27

OTHER PUBLICATIONS

Mullenbach et al, Federation Proceeding 42, abstract No. 434 Apr. 25(1983).
Li et al, Proc. Natl. Aca. Sci., USA, 80 2216–2220, (1983).
Woods et al, Proc. Natl. Aca. Sci., USA, 19 5661–5665, (1982).
Rinderknecht et al, J. Biol. Chem., 253 2769–2776 (1978).
Rinderknecht et al, FEBS. LETT. 89, 283–286 (1978).
Woods et al, PNAS USA, vol. 79, (1982), pp. 5661–5665.
Chemical Abstracts 97:104587r (1982).
Chemical Abstracts 98:101617k (1983).
Chemical Abstracts 102:180060a (1985).
Ullrich et al., *The EMBO Journal,* (1984) 3:361–364.
Jansen et al., *Nature,* (1983) 306:609–611.
Rinderknecht and Humbel, *J. Biol. Chem.,* (1978) 253:2769–2776.
Rinderknecht and Humbel, *FEBS Lett.,* (1978) 89:283–286.
Mullenbach et al., (1983) Federation Proceedings (USA) 42, abstract No. 434.
Biotechnology News (1983) 3:1–3.
Peters et al., (1984) J. Cell. Biochem., vol. 0, No. 8, Part A, p. 295, abstract 0818.
Ullrich et al., (1984) EMBO J. 3:361–364.
Bell et al., (1984) Nature 310:775–777.
Riggs et al., (1979) Am J. Human Genet. 31:531–538.

(List continued on next page.)

Primary Examiner—Jacqueline Stone
Attorney, Agent, or Firm—Morrison & Foerster

[57] **ABSTRACT**

Polynucleotide sequences which encode for human prepro insulin-like growth factors are provided. Such sequences are obtained from the human genome, typically by screening a cDNA library obtained from human liver cells. The polynucleotide sequences may be used for cloning and expression of insulin-like growth factors in suitable hosts, as well as for the production of DNA and RNA which may be used as hybridization probes.

E. coli strains HB101(phigf1) and HB101(phigf2) were deposited at the ATCC on Jun. 8, 1984, and granted accession nos. 39729 and 39730, respectively.

22 Claims, 3 Drawing Sheets

maintenance fees
'en years and six
s thereafter upon
id timing of the
: payment of the
· on or before the
t will expire as of